
ESD.70J Engineering Economy

Fall 2009
Session Zero

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Class outline

1. Objective: get you up to speed for Session 1!
 - Excel versions and languages
 - Excel basics for ESD.70
 - Few tricks to speed up analysis
 - More learning material

Course website

http://ardent.mit.edu/real_options/ROcse_Excel_latest/Excel_Classes.html

- All files posted on the web
 - Ask to transfer files manually if you cannot connect

Excel versions

- Versions currently “in use”
 - PC: 2000, XP or 2003, 2007
 - Mac: 2004, 2008
 - Open source: Open Office Calc (see website)
- Many, many languages
 - Chinese, English, French, Japanese, Spanish...
 - Obviously cannot support all (see website for handy tips in French and Spanish)

Recommended versions

- Class supported in Excel 2007 for PC, and Excel 2004 for Mac
- Why?
 - Excel 2007 widely used on PC
 - Excel 2008 for Mac does not support Solver and other functionalities required for class
- Make sure you have one of those installed!
- Ask your department for a free copy of software

Course Materials

- Excel spreadsheets
 - ESD70session# -1.xls : setup before the class
 - ESD70session# -2.xls : reflects all the work done in class
 - Do the exercises with me → the only way to learn
 - Cells marked as are for you to fill
 - Refer to the ESD70session# -2.xls to validate your work
- Lecture in PDF on course website

Excel basics

Open ESD70session0-1.xls

[http://ardent.mit.edu/real_options/ROcse_Excel_latest/ESD 70
2007/ESD70session0-1.xls](http://ardent.mit.edu/real_options/ROcse_Excel_latest/ESD%2070%202007/ESD70session0-1.xls)

Excel basics

- Entering numbers and formulas
- Working with multiple sheets
- Manual vs. automatic calculations

Big vs. Small setup

- Building a computer plant
- Deterministic demand projections for years 1, 2 and 3 are 300,000, 600,000, and 900,000 respectively
- No sales in year 4 or thereafter
- Plan A – a big plant; Plan B – one small plant each year;
- Plants take a few months to construct
- Big plant capacity of 900,000 with capital cost of \$900 million
- Each small plant capacity of 300,000 with capital cost of \$300 million
- No salvage value for Plan A; \$300 million salvage value for Plan B
- Discount rate for Plan A is 9%, and 8% for Plan B
- The company will sell each computer for \$2,000
- Variable cost for Plan A is \$1,280 due to economies of scale; Variable cost for Plan B is \$1,500
- See “Entries” Worksheet...

Entering numbers and formulas

- Click on ‘Entries’ tab
 - Fill in yellow cells as per case assumptions
 - E.g. enter “9%” in cell D3, “8%” in cell D4
- Click on ‘Plan A’ tab
 - Fill in yellow cells, guided by comments
 - Referencing fields across sheets (and files)
 - E.g. enter “1” in cell E3, “=Entries!D14*‘Plan A’!E3” in cell E4

Manual vs. automatic calculations

- How to set it up
 - Mac: Excel ⇒ Preference ⇒ Calculations
 - PC: Excel ⇒ Excel options ⇒ Formulas
- Shortcuts
 - “F9” on PC and “command =” on Mac

Few more Excel tricks...

- Copy and paste, paste special
- Entering Series
 - Down...
- Cell formatting
- Charts primer
- ‘\$’ fixed cell references
 - Shortcuts “F4” on PC and “command T” on Mac

More learning material

- Excel 2004 for Mac:
<http://web.mit.edu/macardin/Public/docsESD70/DiscoveringMicrosoftOffice2004.pdf>
- Excel 2007 for PC:
<http://office.microsoft.com/en-us/training/HA102255331033.aspx>

Next session...

We begin the main session about NPV,
Sensitivity Analysis and Data Tables

**TAKE A SHORT BREAK AND COME
BACK AT 5h30PM!**